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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,434	09/30/2003	Sriram Natarajan	12406-185001 / P2003,0939	7054

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FISH & RICHARDSON P.C.
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
LIN, JAMES	

ART UNIT	PAPER NUMBER
1762	

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07/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/676,434	NATARAJAN ET AL.	
	Examiner	Art Unit	
	Jimmy Lin	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-51* is/are pending in the application.

4a) Of the above claim(s) *12,13,17-27,36,37 and 40-50* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,14-16,28-35,38,39 and 51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/6/07 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5, 8-9, 15-16, 28-33, 35, 38-39, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon et al. (WO 02/069119 A1). www.surface-tension.de is used as evidence of inherency.

The second solvent of Lyon is interpreted to be the claimed first solvent described in claims 1 and 28, and vice versa.

Lyon discloses a method of fabricating an organic EL device, comprising:

depositing a first electrode on a substrate;

depositing an organic polymer solution on said first electrode (pg. 1, 2nd paragraph);

wherein said solution includes at least one organic polymer (pg. 5, 2nd full paragraph), a first solvent and a second solvent;

wherein said first solvent has a high solubility and a faster evaporation rate than the second solvent, and said second solvent has a very low solubility (paragraph bridging pgs. 2-3);

allowing said solution to dry to form a substantially uniform organic polymer layer (pg. 7, 3rd paragraph).

Lyon teaches that the first solvent can be a mixture of two different solvents, thereby introducing a third solvent. The third solvent can be, for example, xylene (pg. 8, 2nd paragraph). According to www.surface-tension.de, at least one isomer of xylene can have a surface tension of 28.90 dynes/cm at 20 °C.

Lyon teaches that xylene can be 40 vol% in the mixture of the three solvents, but does not explicitly teach that xylene is about 20 weight percent of the solution. For simplification purposes, the solvents as taught in Lyon (i.e., the solvents exemplified on pg. 8) will be assumed to have negligible differences in densities, such that volume percent is equivalent to weight percent. Accordingly, Lyon teaches that the low solubility second solvent can be 60 vol% (pg. 4, 1st full paragraph), thereby leaving 40 vol% for the first solvent. The first solvent can comprise of two different solvents, one of which is xylene (pg. 8, 2nd paragraph). To have used equal amounts of the two different solvents as the first solvent would have been an obvious modification. Equal amounts would be 20 vol% (or 20 weight percent) of each solvent. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used 20 weight percent of xylene (i.e., a third solvent having a surface tension less than 30 dynes/cm) with a reasonable expectation of success. One would have been motivated to do so in order to have used equal amounts of the two different solvents as the first solvent.

Claims 2,29: The solubility of the organic polymer in the first solvent is greater than 0.5% weight per volume, preferably greater than 1.5%. The solubility of the organic polymer in the second solvent is up to 0.5% weight per volume, preferably in the range of 0.03 to 0.3% (paragraph bridging pgs. 3-4).

Claims 3-4,30-31: The first solvent has a boiling point in the range of 100 to 200 °C. The second solvent has a boiling point in the range of 130 to 300 °C (pg. 3, 4th full paragraph).

Claims 5,33: The first solvent evaporates leaving behind a saturated solution in the second solvent. A uniform distribution of the polymer is formed (pg. 7, 3rd paragraph).

Claim 6: Lyon does not explicitly teach the temperature is raised and a vacuum is applied to the solution in order to increase the rate of evaporation. However, it is well known and inherent that increasing the temperature and decreasing the pressure will increase the rate of evaporation of any liquid. One skilled in the art would have known to adjust these variables to evaporate the solvents at a faster rate with a reasonable expectation of success. Therefore,

adjusting the temperature and pressure to achieve a known result would have been an obvious modification.

Claim 8: The second electrode is deposited onto the organic polymer layer (pg. 1, 2nd paragraph).

Claim 9,32: An ink-jet technique may be used for depositing the organic polymer layer solution (Example 1).

Claim 15,39: The thickness variation is less than 15% (pg. 5, lines 1-3).

Claim 16: The organic electronic device is an OLED.

Claim 35: The organic polymer can be polyfluorene (Example 1).

Claim 38: The organic polymer is deposited onto an electrode.

Claim 51: Lyon does not explicitly teach that xylene can be less than about 10 weight percent in the solution. However, given that the Applicant has not suggested any criticality on such a weight percent of the third solvent, one of ordinary skill in the art would have used any amount for the two different solvents in the first solvent with an expectation of similar results and with a reasonable expectation of success. In the interpretation above, the first solvent constitutes 40 weight percent of the solution. To have used 10 weight percent of xylene and 30 weight percent of the other solvent would have been an obvious modification. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used any weight percent of xylene below 40 weight percent, including the claimed range of less than 10 weight percent, in the solution of Lyon with a reasonable expectation of success because one of ordinary skill in the art would have expected similar results when using any amount of xylene within the range as taught in Lyon, especially given the lack of evidence indicating that such weight percents have unexpected results.

4. Claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon '119 in view of the admitted prior art.

Lyon is discussed above, but does not explicitly teach that banks having apertures are formed on the electrode, wherein the organic polymer solution is deposited into the aperture, and the bank holds the deposited organic polymer solution. However, the Applicant recites that it is known in the art to form banks onto the first electrode in order to form apertures. The EL

materials are then deposited into these apertures (pg. 1, 3rd paragraph). The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form banks onto the first electrode and deposit the EL materials into the apertures because the Applicant admits that such is known in the EL art.

Claim 14: One isomer of xylene has a surface tension of 28.90 mN/m (www.surface-tension.de), which is the same as 28.90 dynes/cm. Therefore, xylene can be considered to have "low surface tension", and the organic polymer in the solvent blend will necessarily completely fill said apertures.

5. Claims 10-11 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon '119 in view of Inbasekaran et al. (U.S. Patent 6,916,902).

Lyon is discussed above, but does not explicitly teach that the first solvent can be mesitylene and that the second solvent can be decalin. However, Inbasekaran teaches that mesitylene and decalin are suitable solvents to form a solution with a polymer used to make the EL layer (column 9 line 20 – column 10 line 15). The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). One skilled in the art would have selected a suitable solvent having a desired boiling point necessary to carry out the method of Lyon. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used mesitylene and decalin as the first and second solvents with a reasonable expectation of success because Inbasekaran teaches that such solvents are suitable for forming an EL polymer solution.

The densities of mesitylene, decalin, and xylene are assumed to have negligible density differences such that volume percent of the liquids are equivalent to their weight percent. The rejection in regards to the weight percent of xylene still applies.

Claim 11: Lyon uses a polyfluorene as the organic polymer (Example 1).

Response to Arguments

6. Applicant's arguments filed 6/6/2007 have been fully considered but they are not persuasive.

Claims 1-5, 8-9, 15-16, 28-33, 35, 38-39, and 51 as rejected over Lyon '119:

In response to applicant's argument on pg. 1 that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

The Applicant argues on pg. 1 that "obvious modification" is not the standard for supporting a *prima facie* case of obviousness as used in the rejection of claim 51. However, one of ordinary skill in the art would have expected the use of any amount of xylene within the disclosed range of Lyons to have similar results and would have done so with a reasonable expectation of success and, thus, using an amount of xylene within the claimed range would have been an obvious modification. Further, the Applicant has not provided any evidence that the claimed range in claim 51 has any sort of criticality or yields unexpected results.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JL

TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER